



Synthesis of HIV-1 gp41 using AmphiSpheres™ Resin

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Introduction

The 28 residue HIV-1 gp41 ectodomain sequence, H-NEQELLELDKWASLWNWFNITNWLWYIK-NH₂ (de la Torre *et al.*, 2007), is difficult to synthesize. Multiple tryptophan, leucine, asparagine and glutamic acid residues as well as other amino acids requiring side chain protection clearly make this a difficult prospect and would normally require optimization of the synthetic strategy.

Instrumentation and Conditions

Column: Varian Polaris 5 μ m C18-A 150 x 4.6 mm (P/N A2000250X046)

Gradient: 10 – 30% MeCN (0.1% TFA), 0 – 30 min

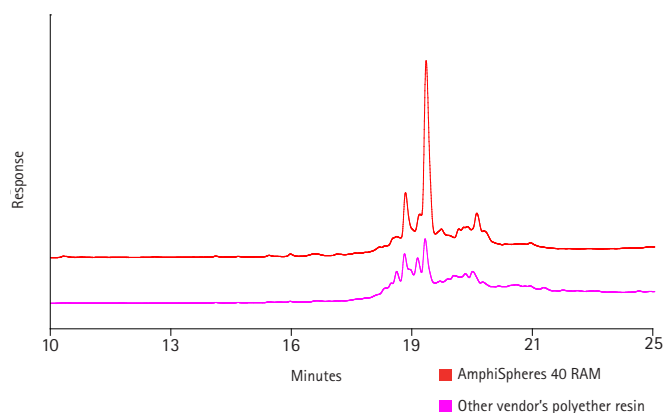
Flow rate: 1 mL/min

UV detector: 220 nm

Injection volume: 20 μ L

Sample Preparation

The peptide was prepared using a peptide synthesizer on a 0.1 mmol scale using 10 fold excess Fmoc-AA-OH (with standard side chain protection as required) and coupling reagent (HBTU) for coupling reactions. Single 9 minute couplings were used throughout. Deprotection reactions (20% piperidine in DMF) were monitored by conductivity meter. Following peptide assembly and cleavage of the final Fmoc group on the synthesizer the peptide was cleaved from the resin by treating with TFA / TIPS / water 95:2.5:2.5 (v/v) for 2-3 h. Cleavage reagents were removed by rotary evaporation followed by trituration of the resultant solid with cold ether. The peptide was then lyophilized from water or water / acetic acid mix.



Results and Discussion

Synthesis of HIV-1 gp41 using AmphiSpheres resin outperformed the synthesis using a commercially available polyether resin (HPLC/MS confirms the major peak as 3653 [M+H]⁺).

Conclusions

AmphiSpheres 40 RAM successfully synthesized HIV-1 gp41. AmphiSpheres is a significant addition to the StratoSpheres product line from Varian, Inc. AmphiSpheres resins contain hydrophobic polystyrene and hydrophilic polyethyleneglycol components. This imparts a change in the swell characteristics of this amphipathic resin that can help improve synthesis of "difficult" peptide sequences.

References

de la Torre, B. G. *et al.*, 2007, *Int. J. Pept. Prot. Res.*, **13**, 265-270

These data represent typical results.
For further information, contact your local Varian Sales Office.